

exhibited by Dr. Mantell to the Society, in proof of the statements contained in the memoir.

2. "On the *PELOROSAURUS*; an undescribed gigantic terrestrial reptile, whose remains are associated with those of the *Iguanodon* and other Saurians, in the Strata of Tilgate Forest." By Gideon Algernon Mantell, Esq., LL.D., F.R.S., Vice-President of the Geological Society, &c.

The author had for a long while entertained the idea, that among the remains of colossal reptiles obtained from the Wealden strata, there were indications of several genera of terrestrial saurians, besides those established by himself and other geologists. The recent discovery of an enormous arm-bone, or humerus, of an undescribed reptile of the crocodilian type, in a quarry of Tilgate Forest in Sussex, where Dr. Mantell had many years since collected numerous teeth and bones of the *Iguanodon*, *Hylæosaurus*, &c., and some remarkable vertebræ not referable to known genera, induced him to embody in the present communication the facts which his late researches have brought to light.

The humerus above-mentioned was found imbedded in sandstone, by Mr. Peter Fuller of Lewes, at about 20 feet below the surface; it presents the usual mineralized condition of the fossil bones from the arenaceous strata of the Wealden. It is four and a half feet in length, and the circumference of its distal extremity is 32 inches! It has a medullary cavity 3 inches in diameter, which at once separates it from the *Cetiosaurus* and other supposed marine saurians, while its form and proportions distinguish it from the humerus of the *Iguanodon*, *Hylæosaurus*, and *Megalosaurus*. It approaches most nearly to the Crocodilians, but possesses characters distinct from any known fossil genus. Its size is stupendous, far surpassing that of the corresponding bone even of the gigantic *Iguanodon*; and the name of *Pelorosaurus* (from *πέλωρ* *pelor*, monster) is therefore proposed for the genus, with the specific term *Conybeari*, in honour of the palæontological labours of the Dean of Llandaff.

No bones have been found in such contiguity with this humerus, as to render it certain that they belonged to the same gigantic reptile; but several very large caudal vertebræ of peculiar characters, collected from the same quarry, are probably referable to the *Pelorosaurus*; these, together with some distal caudals which belong to the same type, are figured and described by the author.

Certain femora and other bones from the oolite of Oxfordshire, in the collection of the Dean of Westminster, at Oxford, are mentioned as possessing characters more allied to those of the *Pelorosaurus*, or to some unknown terrestrial saurian, than to the *Cetiosaurus*, with which they have been confounded.

As to the magnitude of the animal to which the humerus belonged, Dr. Mantell, while disclaiming the idea of arriving at any certain conclusions from a single bone, states that in a Gavial 18 feet long, the humerus is 1 foot in length; *i. e.* one-eighteenth part of the length of the animal, from the end of the muzzle to the tip of

the tail. According to these admeasurements the Pelorosaurus would be 81 feet long, and its body 20 feet in circumference. But if we assume the length and number of the vertebræ as the scale, we should have a reptile of relatively abbreviated proportions; even in this case, however, the original creature would far surpass in magnitude the most colossal of reptilian forms.

In conclusion, Dr. Mantell comments on the probable physical conditions of the countries inhabited by the terrestrial reptiles of the secondary ages of geology. These highly-organized colossal land saurians appear to have occupied the same position in those ancient faunas as the large mammalia in those of modern times. The trees and plants whose remains are associated with the fossil bones, manifest, by their close affinity to living species, that the islands or continents on which they grew possessed as pure an atmosphere, as high a temperature, and as unclouded skies as those of our tropical climes. There are therefore no legitimate grounds for the hypothesis in which some physiologists have indulged, that during the "*Age of Reptiles*" the earth was in the state of a half-finished planet, and its atmosphere too heavy, from an excess of carbon, for the respiration of warm-blooded animals. Such an opinion can only have originated from a partial view of all the phenomena which these problems embrace, for there is as great a discrepancy between the existing faunas of different regions, as in the extinct groups of animals and plants which geological researches have revealed.

The memoir was illustrated by numerous drawings, and the gigantic humerus of the Pelorosaurus and other bones were placed before the Society.

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February 21, 1850.

GEORGE RENNIE, Esq., Treasurer, in the Chair.

Robert Alfred Cloyne Austen, Esq. was admitted into the Society.

The following papers were read:—

1. "On the Extension of the Principle of Fermat's Theorem of the Polygonal Numbers to the higher orders of series whose ultimate differences are constant. With a new Theorem proposed, applicable to all the Orders." By Sir Frederick Pollock, Lord Chief Baron, F.R.S.

The object of this paper professes to be to ascertain whether the principle of Fermat's theorem of the polygonal numbers may not be extended to all orders of series whose ultimate differences are constant. The polygonal numbers are all of the *quadratic* form, and they have (according to Fermat's theorem) this property, that every number is the sum of not exceeding, 3 terms of the triangular numbers, 4 of the square numbers, 5 of the pentagonal numbers, &c.

It is stated in this paper that the series of the odd squares 1, 9, 25, 49, &c. has a similar property, and that every number is the sum of